REMARKS/ARGUMENTS

Claims 27-39 are active in this application, claims 1-26 having been previously cancelled. Claims 27, 33 and 39 have been amended to specify that the nanopores present in the structure of the present invention contain therein nanoparticles made of the one or more metals or non-metals, wherein the structure has a distribution of nanoparticles having an average length, L, and a standard deviation, σ, such that σ/L is no more than 5%. This amendment is supported by the specification at page 14, lines 1-11. No new matter is believed to be added by the present amendments.

The present invention has for the first time demonstrated that perpendicular recording is feasible. In order to make such perpendicular high-density recording media feasible, it was necessary to provide an array of nanopores, containing nanoparticles (nanowires) having very controlled heights. The present invention has for the first time provided the ability to do that, due to the use by the inventors of reverse-pulsed electrodeposition using a rectangular waveform pulse. The resulting arrays, which can be used in forming magnetic recording media, have very high uniformity due to the ability to control the growth of the nanowires in the nanopores. The claims as now amended specify this high uniformity as a function of the ratio between the standard deviation of the length of the nanowires, and the length of the nanowires. In particular, the present invention, as now claimed, requires that the distribution of nanoparticles have an average length, L, and a standard deviation, σ, such that σ/L is no more than 5%. Because of this tight control of the distribution of nanowire lengths in the nanopores, the present inventors have provided a highly uniform recording medium capable of perpendicular recording, as opposed to in-plane recording.

The claims stand rejected under 35 U.S.C. 102(b) over either of Daimon et al or Kikitsu et al. In addition the claims stand rejected under 35 U.S.C. 103 over Kikitsu et al, in view of Black et al. However, none of these references describes or suggests the present

invention as now claimed. In particular, each of Daimon et al and Kikitsu et al use AC type methods to create their structures. While this is fine for the production of in-plane recording media, Applicants have shown that such AC methods do not produce the type of uniformity of nanowire length necessary to provide a perpendicular recording capability. In particular, as reported on page 19, lines 14-18 of the present specification, the use of conventional AC ECD (as done in each of Daimon et al and Kikitsu et al, along with sputtering), has been shown by the present inventors to result in unacceptable values of σ/L on the order of 16%. Additionally, in conventional AC ECD, the ECD current decreases with time, eventually leading to cessation of growth. Such poor uniformity of the nanowire lengths is not sufficient for use in a perpendicular recording medium. However, Applicants have found that by keeping the uniformity such that σ/L is no more than 5%, by use of the reverse-pulsed electrodeposition method of the present application, a recording medium suitable for perpendicular recording can be provided.

While Applicants acknowledge that the present claims are drawn to the products and not the method of the present invention (which Applicants reserve the right to pursue in a Divisional application), the uniformity required by the product claims as now amended cannot be readily achieved using the methods of the cited references (at least not without undue experimentation). As such, the references cannot anticipate the present claims nor render them obvious.

Black et al cannot overcome the deficiencies of Kikitsu, as Black et al disclose a structure in this the nanoparticles are adhered to the surface of a substrate, rather than being inside the nanopores present in the substrate as required by the present invention. Accordingly, Black et al cannot achieve the uniformity required by the present invention claims, and cannot achieve a product that would be capable of perpendicular recording.

Since none of the references disclose a structure having the high level of nanoparticle size uniformity required in the present claims, the references, alone or in combination, cannot anticipate nor render obvious the present invention and the rejections should be withdrawn.

Applicants submit that the application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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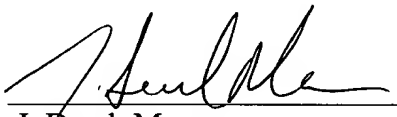

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